

**This Page Is Inserted by IFW Operations
and is not a part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- **BLACK BORDERS**
- **TEXT CUT OFF AT TOP, BOTTOM OR SIDES**
- **FADED TEXT**
- **ILLEGIBLE TEXT**
- **SKEWED/SLANTED IMAGES**
- **COLORED PHOTOS**
- **BLACK OR VERY BLACK AND WHITE DARK PHOTOS**
- **GRAY SCALE DOCUMENTS**

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

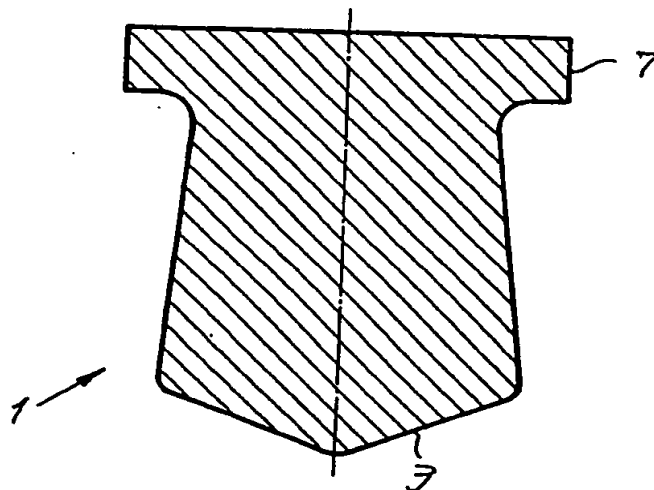


INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁵ : B41F 17/00	A1	(11) International Publication Number: WO 92/05960 (43) International Publication Date: 16 April 1992 (16.04.92)
--	-----------	---

(21) International Application Number: **PCT/BE91/00070**(22) International Filing Date: **4 October 1991 (04.10.91)**(30) Priority data:
9000940 **4 October 1990 (04.10.90)** **BE**(71) Applicant (for all designated States except US): **PRINTING INTERNATIONAL NAAMLOZE VENNOOTSCHAP [BE/BE]; Industriepark, Ambachtenlaan 12, B-9880 Aalter (BE).**

(72) Inventor; and

(75) Inventor/Applicant (for US only): **DE VOLDER, Laurent [BE/BE]; Aalterstraat 11, B-9880 Aalter (BE).**(74) Agent: **DONNE, E.; Bureau M.F.J. Bockstael nv., Arenbergstraat 13, B-2000 Antwerpen (BE).**(81) Designated States: **AT (European patent), AU, BE (European patent), BF (OAPI patent), BJ (OAPI patent), BR, CA, CF (OAPI patent), CG (OAPI patent), CH (European patent), CI (OAPI patent), CM (OAPI patent), CS, DE (European patent), DK (European patent), ES (European patent), FI, FR (European patent), GA (OAPI patent), GB (European patent), GN (OAPI patent), GR (European patent), HU, IT (European patent), JP, KR, LU (European patent), ML (OAPI patent), MR (OAPI patent), NL (European patent), NO, PL, RO, SE (European patent), SN (OAPI patent), SU*, TD (OAPI patent), TG (OAPI patent), US.****Published***With international search report.
In English translation (filed in Dutch).*(54) Title: **PRINTING TAMPON**

(57) Abstract

Printing tampon in elastic material, characterized in that its body has at least a local weakening.

+ DESIGNATIONS OF "SU"

Any designation of "SU" has effect in the Russian Federation. It is not yet known whether any such designation has effect in other States of the former Soviet Union.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	ES	Spain	MG	Madagascar
AU	Australia	FI	Finland	ML	Mali
BB	Barbados	FR	France	MN	Mongolia
BE	Belgium	GA	Gabon	MR	Mauritania
BF	Burkina Faso	GB	United Kingdom	MW	Malawi
BG	Bulgaria	GN	Guinea	NL	Netherlands
BJ	Benin	GR	Greece	NO	Norway
BR	Brazil	HU	Hungary	PL	Poland
CA	Canada	IT	Italy	RO	Romania
CF	Central African Republic	JP	Japan	SD	Sudan
CG	Congo	KP	Democratic People's Republic of Korea	SE	Sweden
CH	Switzerland	KR	Republic of Korea	SN	Senegal
CI	Côte d'Ivoire	LI	Liechtenstein	SU+	Soviet Union
CM	Cameroon	LK	Sri Lanka	TD	Chad
CS	Czechoslovakia	LU	Luxembourg	TG	Togo
DE	Germany	MC	Monaco	US	United States of America
DK	Denmark				

Printing tampon

The present invention concerns a printing tampon, in particular a printing tampon made of elastic material as is used for tampon printing machines whereby through means of this tampon a drawing, text or such is transferred from a printing block onto an object whose surface to be printed is at least partially irregularly or spherically shaped.

It is known that the tampons used until now always have a diameter which progressively shortens towards the free end, in other words the end which will transfer the ink to the surface to be printed, so as to make said tampon not only sufficiently hard, but also sufficiently stiff, whereby this stiffness is determinative for the exact application of the drawings, text and such onto said object.

Given the relatively great hardness, respectively stiffness, of such a tampon, the printing of fragile objects of possibly different sizes by means of such known tampons is extremely difficult, if not impossible.

The present invention concerns a tampon with which the printing of fragile objects of possibly different sizes is perfectly feasible.

An example of an application of such tampons is shown in for example the printing of eggs, in particular a series of eggs, which have already been put in their container which, as is known, usually consists of a cardboard or plastic box provided with cavities in which the eggs can be placed.

It is obvious that we are dealing here not only with fragile objects, but objects which may also slightly vary in size and which have been put in their container in an irregular way and whereby it is nevertheless necessary to apply a correct,

complete impression which is as little deformed as possible on each of the tops of these eggs, and this in preference for a series of objects, for example eggs, at a time in one single printing movement.

A tampon according to the invention which makes the above-mentioned and other advantages possible is mainly characterized in that it has, at least locally, a weakening.

This indeed has an influence on the stiffness of the tampon, one and other such that during the actual printing it can freely reshape itself, as a result of which any harmful pressure on the object to be printed is excluded on the one hand, and the tampon, in particular the printing surface, is automatically positioned on the right place of the object on the other hand.

Such a tampon according to the invention can be made of full as well as hollow material, or also of a combination of materials, for example a hollow tampon filled with foam rubber or such, a full tampon whose actual body, in other words the joint between the mounting part or top part and the actual tampon, i.e. the part which contains the actual printing surface, is made of a foam material, coil spring or such, etc.

In order to better explain the characteristics according to the invention, by way of example only and without being limitative in any way, the following preferred embodiments of a tampon according to the invention are described with reference to the accompanying drawings, where:

figure 1 shows a view in perspective of a tampon according to the invention;

figures 2 and 3 are views similar to that in figure 1, but for variants on the embodiments;

figure 4 shows a section according to line IV-IV in

figure 3;

figures 5, 6, 7, 8, and 9 are sections similar to that in figure 4, but for variants on the embodiments;

figure 10 shows from a side-view and in a schematic way an application of printing tampons according to the invention for the printing of eggs.

Figure 1 shows a tampon 1 which in this case forms a square section with sides 2 and a spherical-shaped base or actual printing surface 3 whereby the stiffness of this tampon according to the invention is reduced by providing an appropriate weakening in the height of this tampon, for example at least two, preferably diametrically opposed recesses, notches or such, in this case four recesses 4 which are placed on the ribs 5 between two adjacent sides 2.

It is clear that in this way the stiffness of the conventional tampon, whose horizontal section shortens towards the free end, is reduced such that said tampon can be reshaped according to a specific angle without the impression being deformed.

A variant according to the invention could be made by providing a groove in each side 2, for example a triangular section, so as to form a circumferential groove 6 as a result of which the stiffness, respectively the possible angular deformation, of such a tampon is further increased.

Such a tampon is always provided with a mounting part or top part 7 which has specific dimensions so as to enable the tampon to be mounted in a holder of a printing machine not shown here.

Figure 2 shows an almost half-spherical tampon 1 in which, still to the same aim as described above, a circumferential groove 6 has been provided, in this case also with a

triangular section.

Figure 3 shows a tampon 1 having an invert, truncated conical shape in which, as described above, a circumferential groove 6 with a triangular section has also been provided.

Although the circumferential groove 6 described above has a triangular shape, it is clear that this groove can produce the same result when made in any other shape.

It is also clear that instead of one single notch 4 or one single circumferential groove 6 two or more weakenings, notches 4 and/or circumferential grooves 6 respectively, can be provided one on top of the other.

Figure 5 shows a variant of the figures 3 and 4 whereby, in order to reduce said stiffness, the dimensions of the body of the tampon decrease from the base of the actual printing surface 3 towards the top part 7. This provides the tampon with a certain angular deformability in a very simple manner by reducing the stiffness of the tampon, as a result of which said tampon can print for example an irregular shaped, bent surface, even when this surface is very vulnerable or fragile and/or being presented in an irregular manner under the tampon, in a correct manner as the tampon can reshape itself towards and around the surface to be printed.

Figure 6 shows another embodiment in which the stiffness of the tampon is influenced on the one hand by reducing the dimensions of the tampon from the basis or printing surface 3 towards the top part 7, and on the other hand by providing one or more circumferential grooves 6 in the perimeter of the tampon 1.

Figure 7 shows a section of a printing tampon as will be used for example for the printing of eggs.

5

The dimensions of this tampon are reduced from the base or actual printing surface 3 towards the top part 7, whereby the actual printing surface 3 is conically shaped.

Figure 8 shows a variant on the embodiment of a printing tampon 1 according to the invention whereby, in this case, the actual printing surface 3 is part of a tampon tip 8 which is attached, for example by means of glue, on a mass of foam material 9, for example foam rubber, which is attached with its other end, for example also by means of glue, to the above-mentioned top part 7.

It is clear that, since the stiffness of the mass of foam material is smaller than the stiffness of the tampon tip 8, in this case also an appropriate angular deformation of the tampon 1 can be obtained, which as a matter of fact is also the case for the variant on the embodiment according to figure 9 whereby the joint between the top part 7 and the tampon tip 8 is formed by a coil spring 10.

Figure 10 shows an application whereby six eggs 12 placed in an appropriate container 11 are being simultaneously printed by means of just as many tampons 1, in this case of the type as shown in figure 7, which are mounted in a common support 14 of a printing machine which is not shown here by means of holders 13.

As is clearly shown in this figure 10, the different tampons 1 will position themselves automatically in an appropriate manner on the head of an egg during the printing of these egg heads and, thanks to the relatively small stiffness of the tampons, bend themselves, depending on the height of the egg and the position of the egg in the container 11, or in other words undergo an angular deformation as a result of which a correct impression of each egg is always obtained.

6

It is clear that the present invention is in no way limited to the embodiments described above; on the contrary, such a tampon according to the invention can be made in various forms and dimensions while still remaining within the scope of the invention.

Claims

1. Printing tampon in elastic material, characterized in that it has at least a local weakening.
2. Printing tampon according to claim 1, characterized in that the above-mentioned weakening is formed by at least two diametrically opposed recesses, notches or such (4) in the body of the printing tampon.
3. Printing tampon according to claim 1, characterized in that the above-mentioned weakening is formed by at least one circumferential groove (6) in the body of the printing tampon.
4. Printing tampon according to claim 1, characterized in that the above-mentioned weakening is formed by reducing the dimensions of the body of the printing tampon (1) from the base of the actual printing surface (3) towards the top part (7).
5. Printing tampon according to claim 4, characterized in that the reducing of said dimensions is done progressively.
6. Printing tampon according to claim 1, characterized in that the above-mentioned weakening is formed by reducing the dimensions of the body of the printing tampon (1) from the base of the actual printing surface (3) towards the top part (7) on the one hand, combined with at least two diametrically opposed recesses, notches or such (4) on the other hand.
7. Printing tampon according to claim 1, characterized in that the above-mentioned weakening is formed by reducing the dimensions of the body of the printing tampon (1) from the base of the actual printing surface (3) towards the top part (7) on the one hand, combined with at least one circumferential groove (6) on the other hand.

8

8. Printing tampon according to claim 1, characterized in that the above-mentioned weakening is formed by means of a mass of foam material (9) which forms the joint between the top part (7) and a tampon tip (8).

9. Printing tampon according to claim 8, characterized in that the foam material is attached on the one hand with the top part (7) and on the other hand with the tampon tip (8) by glueing.

10. Printing tampon according to claim 1, characterized in that the above-mentioned weakening is formed by means of a coil spring (10) which is mounted between the top part (7) and the tampon tip (8).

11. Printing tampon according to any of the above claims, characterized in that the base or actual printing surface (3) is spherically shaped.

12. Printing tampon according to any of claims 1 to 10, characterized in that the base or actual printing surface (3) is conically shaped.

1/2

Fig. 1

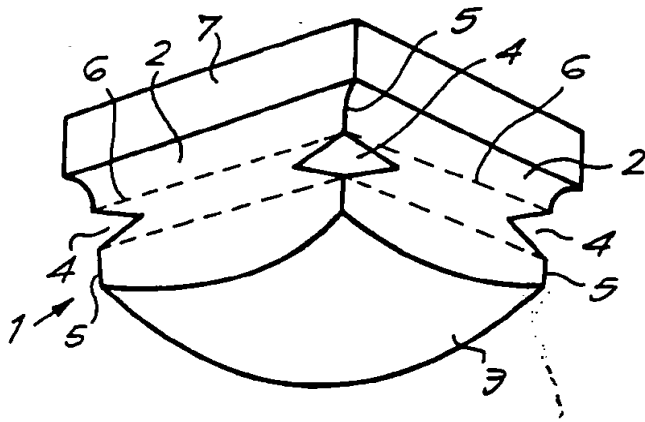


Fig. 2

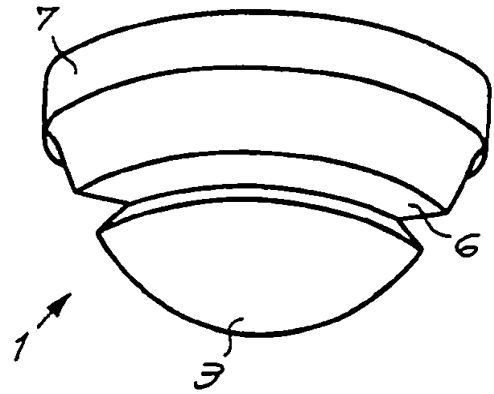


Fig. 3

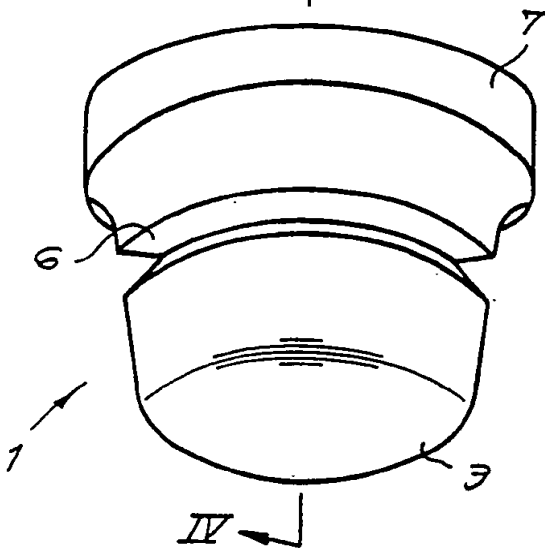


Fig. 4

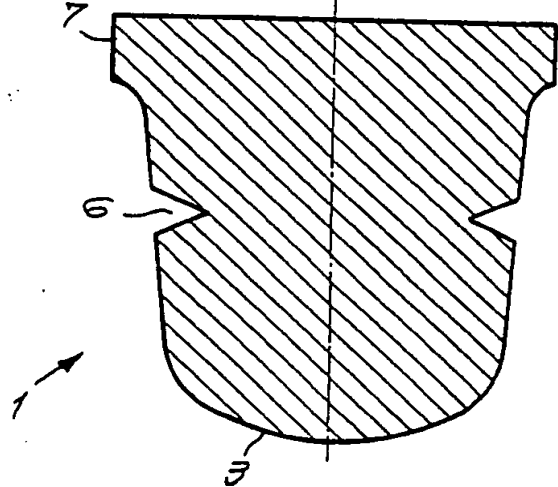


Fig. 6

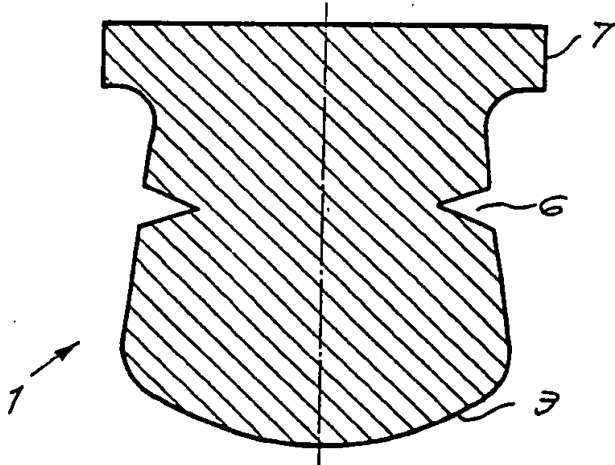
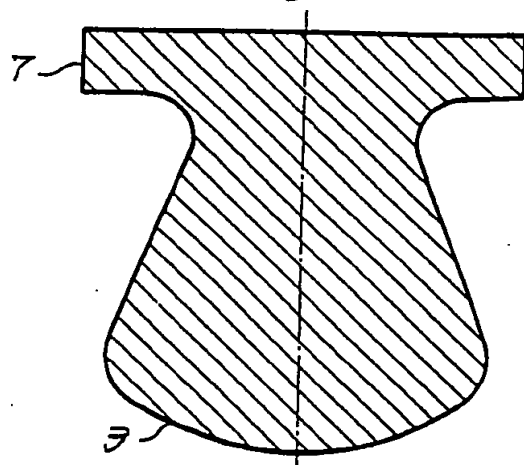
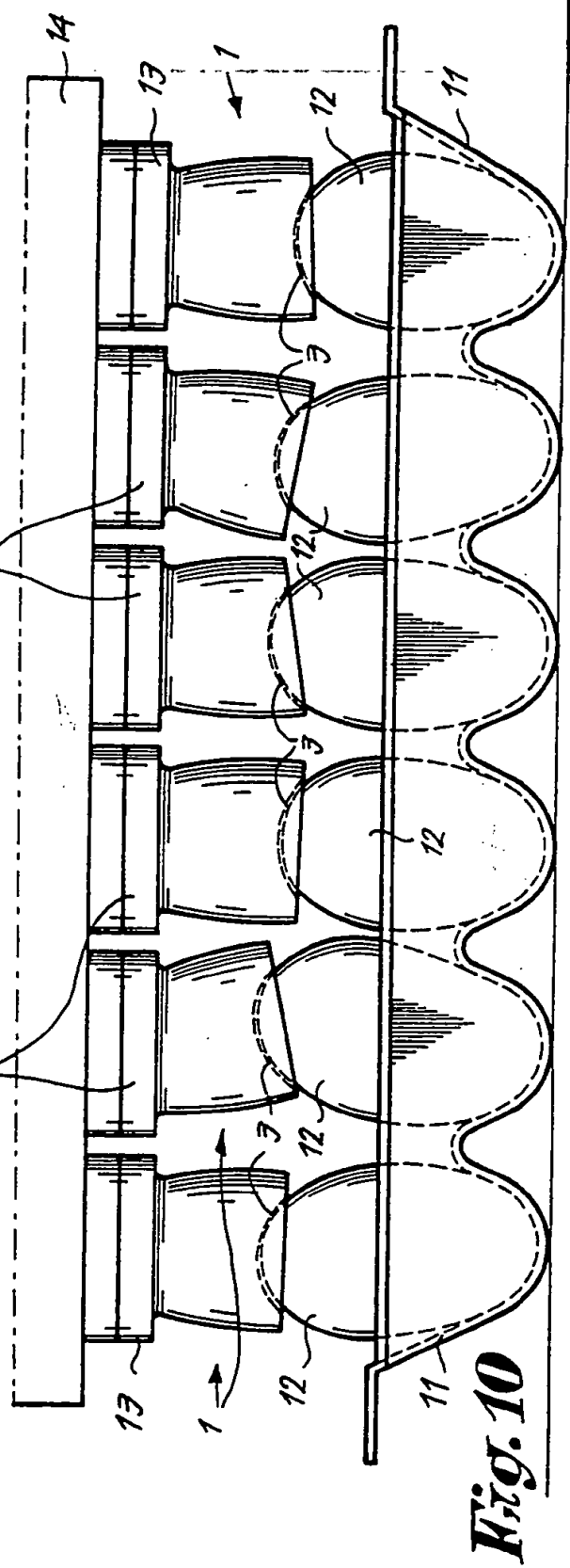
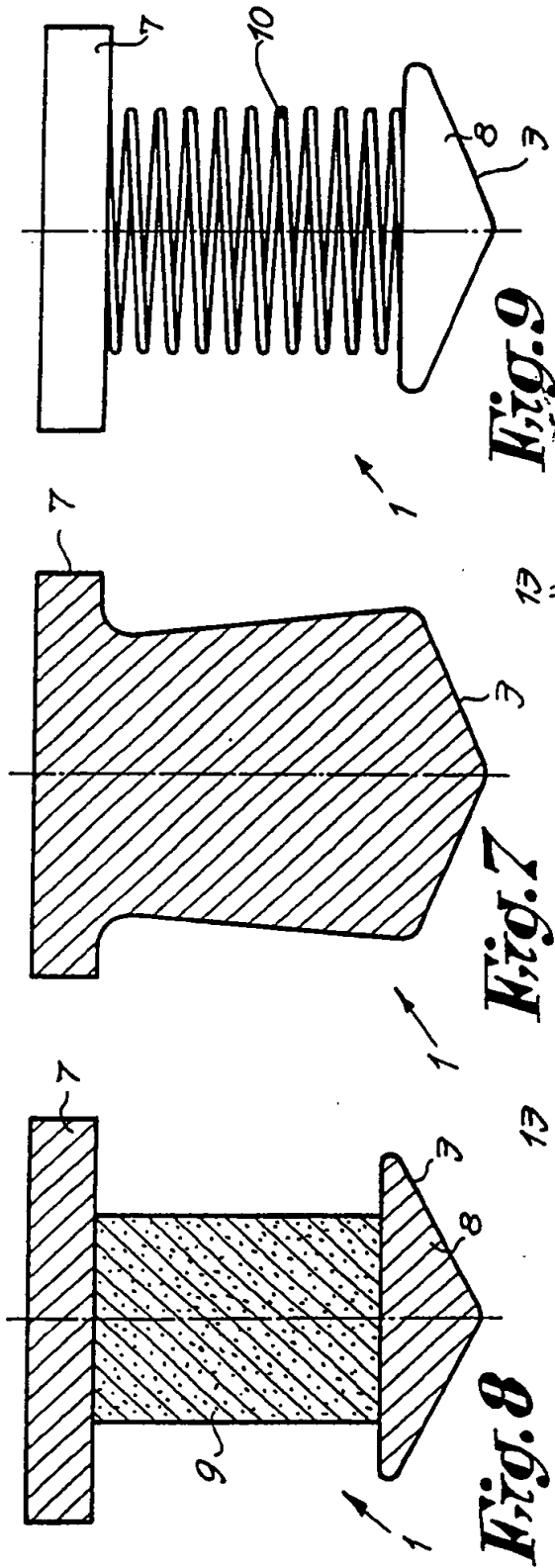


Fig. 5





INTERNATIONAL SEARCH REPORT

International Application No.

PCT/BE 91/00070

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all)⁶

According to International Patent Classification (IPC) or to both National Classification and IPC

Int.Cl. 5 B41F17/00

II. FIELDS SEARCHEDMinimum Documentation Searched⁷

Classification System

Classification Symbols

Int.Cl. 5

B41F

Documentation Searched other than Minimum Documentation
to the Extent that such Documents are Included in the Fields Searched⁸**III. DOCUMENTS CONSIDERED TO BE RELEVANT⁹**

Category ¹⁰	Citation of Document, ¹¹ with indication, where appropriate, of the relevant passages ¹²	Relevant to Claim No. ¹³
A	GB,A,735 637 (MURRAY) 24 August 1955 see page 3, line 102 - line 112; figures 8,9 ---	1,8,11
A	US,A,3 338 162 (MATTHEWS & CO) 29 August 1967 see column 2, line 50 - line 72; figures 1-4 ---	1,3
A	NL,A,29 464 (PACIFIC EGG PRODUCERS) 15 November 1932 see page 2, line 41 - line 69; figures 5,6 ---	1,10

¹⁰ Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

IV. CERTIFICATION

Date of the Actual Completion of the International Search

10 DECEMBER 1991

Date of Mailing of this International Search Report

17. M. 92

International Searching Authority

EUROPEAN PATENT OFFICE

Signature of Authorized Officer

LONCKE J.W.

**ANNEX TO THE INTERNATIONAL SEARCH REPORT
ON INTERNATIONAL PATENT APPLICATION NO.**

BE 9100070
SA 51359

This annex lists the patent family members relating to the patent documents cited in the above-mentioned international search report. The members are as contained in the European Patent Office EDP file on
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information. 10/12/91

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
GB-A-735637		None	
US-A-3338162		None	
NL-A-29464		None	